THIS PAGE BLANK (USPTO)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Kasvand et al.   Docket: 8673-117 (8061-598 SJP:kl)

Serial No.: 09/832,373   Examiner:

Filed: April 11, 2001   Group: Art Unit   2152

For: EXECUTION SETS FOR GENERATED LOGS

Assistant Commissioner for Patents
Washington, D.C. 20231

SUBMISSION OF PRIORITY DOCUMENT

Sir:

Attached herewith is a certified copy of United Kingdom Application No. 0008734.6 filed November 4, 2000 above-identified application under 35 U.S.C. §119.

Respectfully submitted,

F. CHAU & ASSOCIATES, LLP

Frank Chau
Reg. No. 34,136
Attorney for Applicant(s)

F. CHAU & ASSOCIATES, LLP
1900 Hempstead Turnpike, Suite 501
East Meadow, NY 11554
Tel.: (516) 357-0091
Fax: (516) 357-0092
FC:mel

CERTIFICATE OF MAILING UNDER 37 C.F.R. §1.8(a)
I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail, postpaid in an envelope, addressed to the: Assistant Commissioner for Patents, Washington, D.C. 20231 on July 17, 2001.

Dated: ___7/17/01___   _____
                                    Frank Chau

THIS PAGE BLANK (USPTO)

INVESTOR IN PEOPLE

I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

In accordance with the rules, the words "public limited company" may be replaced by p.l.c., plc, P.L.C. or PLC.

Re-registration under the Companies Act does not constitute a new legal entity but merely subjects the company to certain additional company law rules.
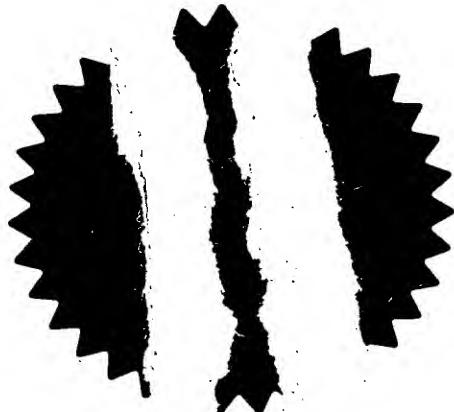
Signed

Dated 17 APR 2001

THIS PAGE BLANK (USPTO)

Patents Form 1/77

Patents Act 1977
(Rule 16)

Request for grant of a patent
(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

The
Patent.
Office
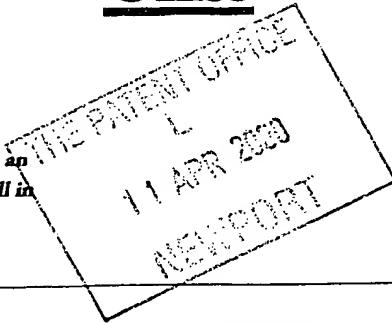
The Patent Office

Cardiff Road
Newport
Gwent NP9 1RH

1. Your reference	RSN/ME/P10561GB

2. Patent application number *(The Patent Office will fill in this part)*	**0008734.6**	**11 APR 2000**

3. Full name, address and postcode of the or of each applicant *(underline all surnames)*

MITEL CORPORATION,
350 LEGGET DRIVE,
P.O. BOX 13089,
KANATA, ONTARIO,
K2K 2W7, CANADA

Patents ADP number *(if you know it)*

If the applicant is a corporate body, give the country/state of its incorporation

607630806
ONTARIO, CANADA

4. Title of the invention

EXECUTION SETS FOR GENERATED LOGS

5. Name of your agent *(if you have one)*

"Address for service" in the United Kingdom to which all correspondence should be sent *(including the postcode)*

CRUIKSHANK & FAIRWEATHER,
19 ROYAL EXCHANGE SQUARE,
GLASGOW   G1 3AE,
UNITED KINGDOM

Patents ADP number *(if you know it)*   547002

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and *(if you know it)* the or each application number

Country	Priority application number *(if you know it)*	Date of filing *(day / month / year)*

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application	Date of filing *(day / month / year)*

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? *(Answer 'Yes' if:*
   a) *any applicant named in part 3 is not an inventor, or*
   b) *there is an inventor who is not named as an applicant, or*
   c) *any named applicant is a corporate body.*
   See note (d))

YES

Patents Form 1/77

9. Enter the number of sheets for any of the
following items you are filing with this form.
Do not count copies of the same document

Continuation sheets of this form

Description	5
Claim(s)	2
Abstract	1
Drawing(s)	5

10. If you are also filing any of the following,
state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right
to grant of a patent (Patents Form 7/77)   1

Request for preliminary examination
and search (Patents Form 9/77)   1

Request for substantive examination
(Patents Form 10/77)

Any other documents
(please specify)

11.

I/We request the grant of a patent on the basis of this application.

Signature *Cruikshank & Fairweather*   Date

CRUIKSHANK & FAIRWEATHER   10/04/00

12. Name and daytime telephone number of
person to contact in the United Kingdom

Dr. R.S. Naismith
0141-221 5767

Warning
After an application for a patent has been filed, the Comptroller of the Patent Office will consider whether publication or communication of the invention should be prohibited or restricted under Section 22 of the Patents Act 1977. You will be informed if it is necessary to prohibit or restrict your invention in this way. Furthermore, if you live in the United Kingdom, Section 23 of the Patents Act 1977 stops you from applying for a patent abroad without first getting written permission from the Patent Office unless an application has been filed at least 6 weeks beforehand in the United Kingdom for a patent for the same invention and either no direction prohibiting publication or communication has been given, or any such direction has been revoked.

Notes
a) *If you need help to fill in this form or you have any questions, please contact the Patent Office on 0645 500505.*

b) *Write your answers in capital letters using black ink or you may type them.*

c) *If there is not enough space for all the relevant details on any part of this form, please continue on a separate sheet of paper and write "see continuation sheet" in the relevant part(s). Any continuation sheet should be attached to this form.*

d) *If you have answered 'Yes' Patents Form 7/77 will need to be filed.*

e) *Once you have filled in the form you must remember to sign and date it.*

f) *For details of the fee and ways to pay please contact the Patent Office.*

Execution Sets for Generated Logs

Field of the Invention

5   This invention relates in general to network diagnostics, and more particularly to a network administration system for automatically executing instruction sets in response to generation of error logs in a network.

Background of the Invention

10

It is well known in traditional computer and digital communication networks for technicians to respond to the generation of error logs by notifying affected users of system problems, analyzing and then fixing the problems using an assortment of software commands and/or tools. The use of such software commands

15   is often repetitive and requires the technician to manually enter the commands upon each observation of a specific log.

Summary of the Invention

20   According to the present invention, a network administration system is provided for automatically executing instructions programmed by the technician in response to receipt of particular logs. Thus, the technician is relived of the requirement to manually and repetitively entering commands to correct repeated errors. Accordingly, the network administration system of the present invention may

25   be advantageously used to implement automated self-repairing networks.

Brief Description of the Drawings

A detailed description of the preferred embodiment is set forth herein below

30   with reference to the following drawings, in which:

Figure 1 is a block diagram of an exemplary network incorporating the system of the present invention;

Figure 2 is a table of a set of rules that have been defined for use in the network of Figure 1;

5   Figure 3 is a table showing an exemplary list of logs generated by the network of Figure 1;

Figure 4 shows a graphical user interface for associating execution sets with logs; and

10   Figure 5 is a flowchart showing process flow of the network administration system according to the preferred embodiment.

Detailed Description of the Preferred Embodiment

15   Traditionally, system error logs have been analyzed through human intervention in order to determine the sources of and to correct system errors. Thousands of logs can be generated by a single problem. For example, if a T1 line goes down, error logs could be generated by thousands of phones that cannot find a dial tone. It is known in the prior art to automatically filter error logs through "rule 20   sets" to determine if a combination of logs satisfies a given criteria. One example of such an automated process is a product from Plexis (http://www.triadhc.com/edi.shtml) called Plexis EDI Toolkit. If the criteria is satisfied, it is known in the art either to generate a further log or to provide an overall summary for describing the problem to the technician. Thus, it is known to generate 25   Higher Level Logs (HLL) from Lower Level Logs (LLL) in response to predetermined rule sets being satisfied The Lower Level Logs (LLL) are generated by network applications or devices. Such systems are valuable because the HLLs help to explain to the system administrator/designer what is really going on in the system.

30   There are instances where HLL's generate more HLL logs, or combinations of LLL's and HLL's generate new HLL's. Since HLL's are generated by LLL's and possibly other HLL's, the technician needs to see how the HLL's are triggered since rule-sets can be complex and not easily understood.

According to the present invention, each of these types of logs can be associated with a set of execution instructions. Preferably, the execution sets are implemented as software applications (e.g. shell scripts, command function utilities, etc.) that read each command line and execute its instructions. Thus, specific execution sets may be implemented on many levels of network/system analysis and repair.

Figure 1 shows a typical network comprising a plurality of phones (P1 to P3) connected to a server implemented PBX (PBX 1), a further phone P1 connected to a client server C1, both the client C1 and PBX 1 being connected to a PBX2. The PBX 2 is connected to a T1 trunk in a well known manner. Each of the devices shown in Figure 1, with the exception of the trunk, has the capability of generating logs to inform a technician of the device status. The network configuration is for illustration purposes only, and may incorporate a host of other devices and networks.

As indicated above, Figure 2 demonstrates a set of rule sets that are defined for use in the network in Figure 1, and Figure 3 shows a typical list of logs (HLL's and LLL's) that are generated from the network in Figure 1 as well as associated execution sets when these logs are produced. The execution set does not form part of the error log, which is restricted to the Log ID, Time Generated and Brief Description. The system parses the Brief Description in order to identify the source of a particular error log.

According to the invention, a network administration system is provided for entering execution sets which are designed to execute specific commands in response to receiving a log in connection with which such an execution set has been programmed. In Figure 1, the inventive system is incorporated into PBX 2. Alternatively, the network administration system may be implemented in a separate server connected to the network.

As shown in Figure 4, a user interface is provided for associating logs with execution sets. Each command is entered into a text box relative to the associated log. The execution sets may be associated with each type of log in the software package

that coordinates the logs and the execution sets. When a rule set has been satisfied, the log associated with that rule set is compared to a logs list in the execution set software application and the corresponding command line in the execution set is executed.

5   For the illustrated example, error logs P6000, P6001 and P6002 are generated by devices in the network, resulting in creation of HLL001. According to the invention, an execution set has been programmed for P6001 to display "not fully functional" if the phone has an LED display, and an execution set has been programmed to page the technician and send a medium level alarm upon receipt of the

10   HLL001 log.

       The execution sets are triggered by using software tools (e.g. Visual Basic, C++) to read the logs and determine if the logs generated have an associated execution set, as shown in Figure 5. If there is an association, each command/service

15   in the execution sets is triggered in order (as specified by the user) or simultaneously. Ordered triggering is set by the order of the command lines in an execution set. Thus, the first command in Figure 4 for LogPBX2000 is the CallPhone command line, the second command is the AlarmAgent command line. The user can change the order by clicking on a command line in an execution set and dragging it up or down.

20   Exemplary pseudo-code of the process for implementing the network admistration system of the present invention is as follows:

```
execution sets function prog
    retrieve log
    compare log with list of logs with execution sets
    if log exists with an execution set
        go to first command line in execution set
        while command lines exist in execution set
            execute command line in execution set
            if more command lines exist
                go to next command line
            endif
        endwhile
    endif
```

25

30

end execution sets function prog

Alternatives and modifications of the invention are possible within the sphere and scope as set forth in the claims appended hereto.

What is claimed is:

1.   A network administration system for triggering commands in response to
receipt of error logs from network devices and applications, comprising:

a user interface for programming execution sets of said commands in
association with predetermined ones of said error logs; and

program means for receiving said error logs and for each of said
predetermined ones of said error logs triggering execution of said commands in said
execution sets.

2.   The network administration system of claim 1, wherein said user interface
provides ordered execution of multiple commands associated with said error logs in
accordance with user preference.

3.   The network administration system of claim 1, wherein said user interface and
program means are implemented within one of said network devices.

4.   A method of triggering commands in response to receipt of error logs from
network devices and applications, comprising the steps of:

programming execution sets of said commands in association with
predetermined ones of said error logs; and

receiving said error logs and for each of said predetermined ones of said error
logs triggering execution of said commands in said execution sets.

5.   The method of claim 4, wherein said steps of receiving said error logs and for
each of said predetermined ones of said error logs triggering execution of said
commands in said execution sets further comprise the steps of:
a) detecting an execution set associated with a received error log; and

b) executing each successive command in said execution set.

Abstract

A network administration system for triggering commands in response to
receipt of error logs, comprising a user interface for programming execution sets of
5   commands in association with predetermined error logs, and means for receiving error
logs and for each of the predetermined ones of the error logs triggering execution of
the commands in the execution sets.
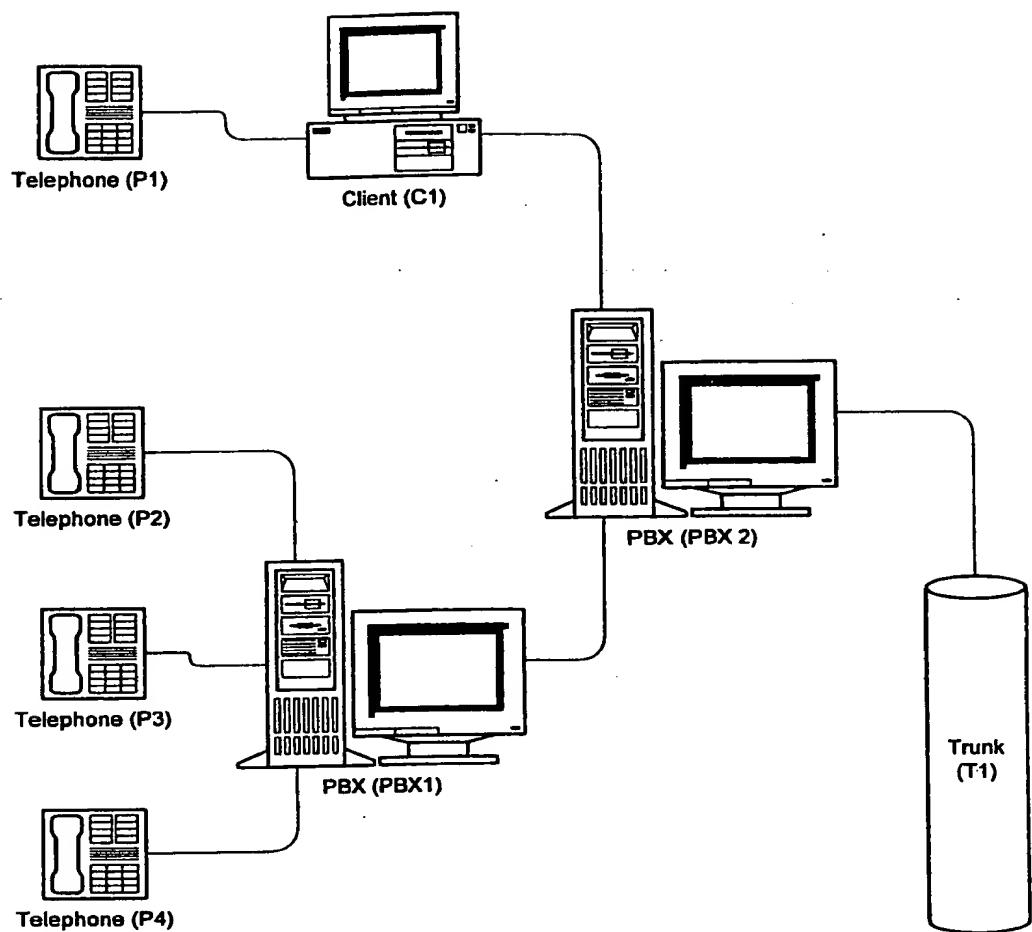
Figure 1

HLL ID	Rule Set	Brief Explanation
HLL001	(LogP6000 or LogP6001 or LogP6002) from 2 or more phones.	Two or more phones are not receiving full services
HLL002	LogPBX2000 + LogC3000	Loss of services. Something is wrong with PBX2
HLL003	HLL001 + HLL002	Loss of services. Something is wrong with T1 trunk.

Figure 2

Log ID	Time Generated	Brief Description	Execution Set
LogP6000	Feb. 29, 2000 14:23:04:12	No dial tone for phone P2.	NONE
LogPBX2000	Feb. 29, 2000 14:23:04:17	PBX 1 is not receiving full services.	- Page technician. - Send Medium level alarm to monitoring application.
LogP6001	Feb. 29, 2000 14:23:04:27	Reduction of features available for phone P4.	- If phone has LED display, display "not fully functional" on LED display.
LogC3000	Feb. 29, 2000 14:23:04:29	Client C1 cannot give services to phones.	- Do self-diagnostic of network services.
HLL002	Feb. 29, 2000 14:23:04:32	Loss of services on network.	- Page two technicians. - Send High level alarm to monitoring application. - Re-route traffic to backup PBX.
LogP6002	Feb. 29, 2000 14:23:05:00	No services available for phone P1.	NONE
HLL001	Feb. 29, 2000 14:23:05:03	PBX 1 is not providing full services to phones.	- Page technician. - Send Medium level alarm to monitoring application.
HLL003	Feb. 29, 2000 14:23:05:05	Trunk T1 is unavailable.	- Page ten technicians. - Send Critical level alarm to monitoring application. - Use another trunk if available.

Figure 3

Smart Logs
File Edit View Tools etc

Execution Sets Entry Page

Add Execution Set

Edit Execution Set .

Delete Execution Set

Execution Sets

| Log	
LogPBX2000	CallPhone 613-592-2122 AlarmAgent -STATUS MEDIUM -Description "LogPBX2000 occurred"
LogP6001	PhoneDIsplay -Parse "Phone ID" -LEDDislay "Not fully functional."
LogC3000	NetworkDiagnostic -Full

Figure 4
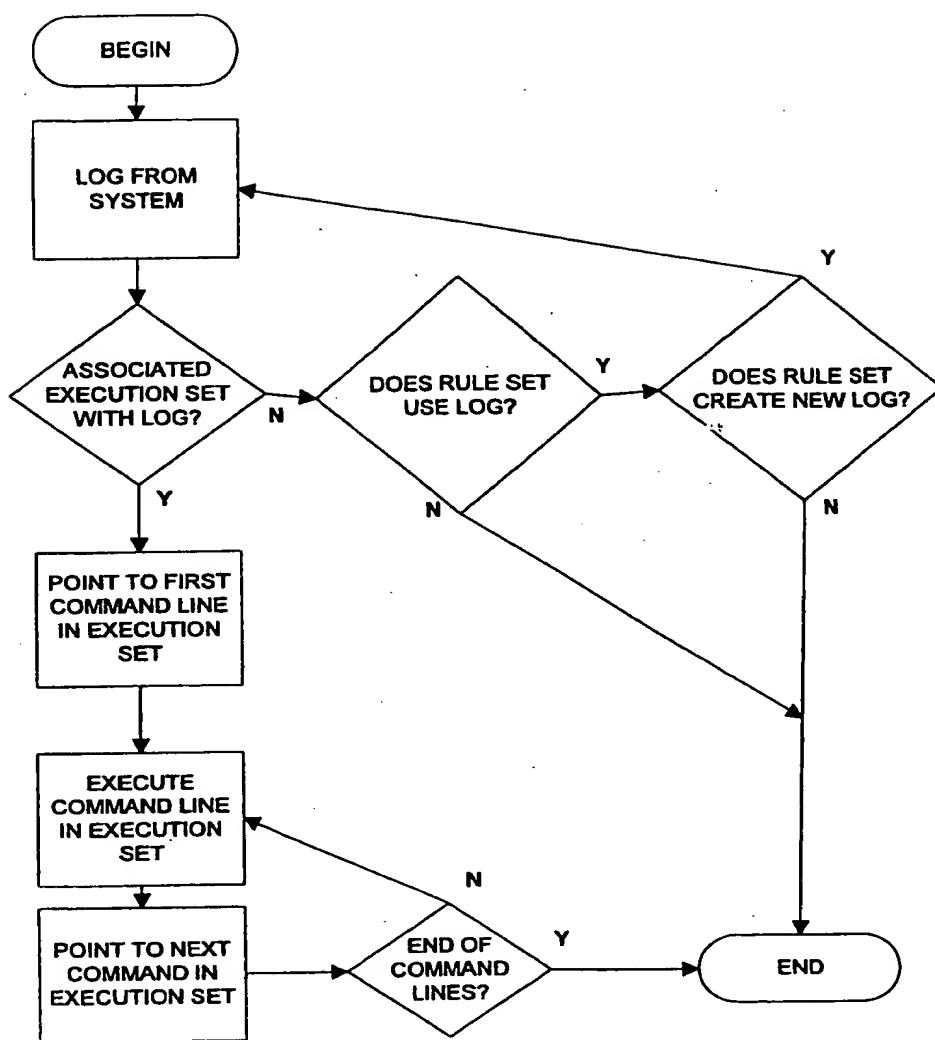
Figure 5

THIS PAGE BLANK (USPTO)